BIM Contracted Information Exchange Workshop

E. William East, PE, PhD
buildingSMART Alliance Project Coordinator
asset management cost

- Inappropriate utilization resulting in decreased performance or unneeded new construction
- Space underutilization resulting in over-building or higher energy costs
- Inability to optimize alternative facility use
- Inability to simulate contingency operations

92% of the total facility life-cycle cost

Relative Cost

Plan  Design  Build  Operate  Use
reduce handover waste

- facility managers receive boxes full of paper
- questionable data accuracy
- owners currently paying for this data two or three times
- full-time transcribers needed
wide stakeholder participation
efforts to date

- **NAVFAC Operations & Maintenance System Information (OMSI)**
  e-paper submission of O&M documents

- **U.S. Army, Department of Public Works, Fort Lewis, WA**
  Pockets of local, proprietary information exchange & expertise

- **Electronic construction submittal register**
  Construction Criteria Base, federal UFGS and UFC’s. SpecsIntact software.

- **International Alliance for Interoperability (IAI)**
  FM Project has been proposed using Industry Foundation Classes (IFC)

- **FIATECH Automated Equipment information eXchange (AEX)**
  Exchange of supply chains information among tiered stakeholders

- **Machinery Information Management Open Systems Alliance (MIMOSA)**
  Exchange standard for equipment telemetry

- **Open Standards Consortium for Real Estate (OSCRE)**
  Asset management and valuation exchange

- **National Institute of Science and Technology (NIST)**
findings

- research results documented in technical report (wbdg.org)
- maintenance information
  - warranties
  - spare/replacement parts
  - pm tasks
  - resources
- operations
  - start-up/shut-down procedure
  - trouble shooting procedures
- asset management
  - space measurement
  - fixed or movable property
  - space-function capabilities
cobie object model

Requirements for information exchange directly match IFC model.

difficulties?

• specification for information delivery

• insuring consistent nomenclature across domains

• implementation of cobie model view definition in commercial software
findings

• different software types provide/use different sets/subsets

• ultimately need “file > save-as cobie” and “file > import cobie” wherever needed but...

• spreadsheet provides common-ground until software companies in each sector provide routines
  – widely useful by all
  – IFC / spreadsheet translation rules provided free of charge
  – can be created by hand, CADD, BIM, and other software
  – extend value of BIM ideas to widest possible stakeholders
designers’ data

<table>
<thead>
<tr>
<th>Facility</th>
<th>Identification of facilities referenced in a file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor</td>
<td>Description of vertical levels</td>
</tr>
<tr>
<td>Space</td>
<td>Spaces referenced in a project</td>
</tr>
<tr>
<td>System</td>
<td>Systems referenced in a project</td>
</tr>
<tr>
<td>Register</td>
<td>Material/equipment/etc. catalog (submittal register)</td>
</tr>
<tr>
<td>Component</td>
<td>Individually named materials and equipment</td>
</tr>
</tbody>
</table>
# builders’ data

<table>
<thead>
<tr>
<th>Installation</th>
<th>Location and serial no. of installed components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>Instruction manuals for sets of/or components</td>
</tr>
<tr>
<td>Warranty</td>
<td>Warranty information for sets of/or components</td>
</tr>
<tr>
<td>Spare</td>
<td>Spare/parts reordering info for sets of/or components</td>
</tr>
</tbody>
</table>

| Instruction | Installation/operating instructions |
| Test        | System/component test results |
| Certification | Installation certifications |
# commissioning agents’ data

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>Identifies specific PM tasks and frequency</td>
</tr>
<tr>
<td>Safety</td>
<td>Identifies required safety tasks</td>
</tr>
<tr>
<td>Trouble</td>
<td>Maintenance trouble shooting procedures</td>
</tr>
<tr>
<td>Start-Up</td>
<td>Start-up procedures</td>
</tr>
<tr>
<td>Shut-Down</td>
<td>Shut-down procedures</td>
</tr>
<tr>
<td>Emergency</td>
<td>Emergency operating procedures</td>
</tr>
<tr>
<td>Material</td>
<td>Special materials needed for a given Job Plan Task</td>
</tr>
<tr>
<td>Tool</td>
<td>Special tools needed for a given Job Plan Task</td>
</tr>
<tr>
<td>Training</td>
<td>Special training needed for a given Job Plan Task</td>
</tr>
</tbody>
</table>
findings – asset management

- research results documented in technical report (wbdg.org)

- maintenance information
  - warranties
  - spare/replacement parts
  - pm tasks
  - resources

- operations
  - start-up/shut-down procedure
  - trouble shooting procedures

- asset management
  - space measurement
  - fixed or movable property
  - space-function capabilities

August 2007
link to portfolio via. owner’s facility id

(ref: buildingSMART Alliance briefing)
space capabilities

OmniClass Table 13 “Spaces by Function”

(ref: Reprt tp ASTM Subcommittee E-6.25, by Subcommittee E06.25 Whole Buildings and Facilities, used by permission of Gerald Davis, Chair)
space measurement

IFMA and BOMA requirements for spatial measurement have been harmonized as represented in:
ASTM E 1836-01 Standard Practice for Building Floor Area Measurements for Facility Management and ANSI standard being updated

Point of Contact: davis-gerald@icf-cebe.com

Comprehensive measurement rules

Interior Gross Area

Window sill section

Inside Gross Area measured to dominant portion

Perimeter Encroachment

Gross Plannable Area

Wall

Floor

Interior Gross Area measured to dominant portion

Perimeter Encroachment (window sill)

Gross Plannable Area measured to wall face

Key to Measurement Rules for Facility Management

- D1 = Defined boundary - Dominant Portion
- D2 = Defined boundary - Perimeter Encroachment and Plannable Gross Area
- C = Measure area to the centre line of its enclosing walls
- W = Measure area and include its enclosing walls
- F = Measure area to the face of the finished surface of the adjacent area
- OPT = Optional (Measurements needed for the ANSI/BOMA Standard 2016)
- N/A = Not applicable

(Ref: Reprt tp ASTM Subcommittee E-6.25, by Subcommittee E06.25 Whole Buildings and Facilities, used by permission of Gerald Davis, Chair)
draft cobie specification

specifications must follow existing facility delivery process

performance-based specifications should allow any team to create the needed data

specifications must reflect real cost to owners of failure to receive this data

designer submits “pre-built” cobie information

builder submits “as-built” cobie information
let’s try BIM?

Your Options When Lifting a Large Spacecraft Out of a Swamp Using The Force, According to Yoda
please help my friend lyle...
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